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(54) BAG BODY FOR SIDE COLLISION AIR BAG

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a bag body for a side collision air bag reducible in the thickness difference of cloth at a joint part of the bag body formed by jointing two pieces of cloth, uniform with a small quantity of coat and expanded between an occupant and a body side window part when impact is applied to the side face of a vehicle, to mainly protect the occupant's head.

SOLUTION: This bag body for a side collision air bag is formed by jointing two pieces of cloth. The single yarn size of rewound raw yarn constituting the cloth is 4 denier (hereinafter abbreviated to d) or less, and the strength is 7.5 gram/denier (hereinafter abbreviated to g/d) or more. The total size of the rewound raw yarn is 100 d-700 d, and the cover factor(CF) value, defined by the following expression, of either of two pieces of cloth is 2000-2500. The dry heat contraction coefficient of raw yarn in use before weaving, which forms the cloth, is 5-150% (180°C×30 min. treatment).

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* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1] The bag body for side collision air bags characterized by being the bag body for side collision air bags which joined the textile of two sheets and was formed, for the single-yarn fineness of the **** raw thread which constitutes this textile being below 4 deniers (Following d and abbreviated name), and reinforcement being more than 7.5g (following g/d and abbreviated name)/denier.
[Claim 2] The bag body for side collision air bags according to claim 1 whose values of the cover factor (CF) as which all of the textile whose number is two are defined by the degree type the total degrees of ** of **** raw thread are 100-700d, and are 2000-2500.
[Claim 3] The bag body for side collision air bags according to claim 1 whose dry heat shrinkage of the use raw thread before weaving which constitutes a textile is 5 - 15% (180 degree-Cx 30-minute processing).
[Claim 4] The bag body for side collision air bags according to claim 1 whose AUW of the spreading and the amount of pastings coating and/or lamination processing are performed to all the outside front faces of a bag body, and is two or less 80 g/m per outside surface area of a bag body.
[Claim 5] The bag body for side collision air bags according to claim 1 with which calendering of the front face of a textile is carried out.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] About the air bag which is one of the safety devices for automobiles, in more detail, this invention is developed between crew and a car-body side-face window part, when an impact joins the side face of a car, and it is related with the air bag aiming at mainly protecting crew's head.
[0002]
[Description of the Prior Art] In recent years, the rate of wearing of the air bag as one of the automobile insurance components is improving quickly with improvement in crew's insurance consciousness. In case of the collision of an automobile, a sensor senses an impact, and an air bag generates an elevated temperature and high-pressure gas from an inflator, develops an air bag rapidly by this gas, and is utility at crew protection.
[0003] Although the air bag has been conventionally equipped with the object for driver's seats, and the thing which takes care of crew at the time of the collision from the transverse plane for passenger seats, recently, the air bag which can respond also to a collision from a side face has been developed.
[0004] As shown in WO 96/No. 26087 official report as an already proposed air bag for a side collision The gas generator connected with the sensor sensed at the time of a side collision and a sideslip, The air bag connected with the gas generator and its air bag consist of two or more long and slender cels which the front face and the rear face are combined firmly, and are substantially parallel, and the cel is formed in the shape of a cylinder at the time of expansion, and is supposed that crew's head can be protected.
[0005] Moreover, when joining the textile-fabrics periphery sections of two sheets as proposed by JP,10-109607,A, it is supposed by carrying out weaving of the textile fabrics to a common textile construction, and carrying out the seal of the whole bag part with a non-infiltrative coating material that the crew restricted effectiveness at the time of a car fall can be enlarged.
[0006] By the way, in order that a receipt location may contain the air bag for a side collision in the location whose storage space, such as the front pillar section, the roof side-rail section, the center pillar section, and the KUWOTA pillar section, is not large unlike the conventional object for driver's seats, or the object for passenger seats, the volume at the time of folding of an air bag bag body cannot be enlarged, but to excel in storability more as an air bag bag body is demanded. In that respect, there is being proposed by the JP,10-109607,A tail, when thickness can be made thin and it becomes advantageous to storability by carrying out weaving of the strand which constitutes textiles, without using sewing yarn to a common weave organization.
[0007] Moreover, in the case of this air bag for a side collision, coating has usually been. Namely, when the time of the sideslip of a car is assumed, unlike the air bag for a driver's seat and passenger seats, it is necessary to secure the internal pressure holding time from several seconds about 10 seconds after air bag expansion. When coating has not been then carried out, in the case of the intersection between the yarn-yarn of a base fabric, or hollow weave, an eye gap takes place on the intersection between yarn-yarn in the joint of 1-fold section and the double section, as a result, gas leakage occurs, and even the textiles woven to high density how much do not have enough internal pressure maintenance capacity.

[0008] Then, although thickness of a base fabric can be made small by the proposal of JP,10-109607,A which needed to apply coat material to the front face and was mentioned above in order to bring the permeability of a textile close to zero infinite, about the policy which can lessen coat coverage, reference is not made at all. Because, if hollow weave is constituted from a proposal of this JP,10-109607,A, the thickness difference of a textile will occur on the boundary of 1-fold section of a periphery, and the double section which forms especially a bag part. On the other hand, in order to lose the gas leakage from an inflator with the whole hollow weave object, the laminating of the coat material of extent set into any part needs to be carried out. That is, if it is going to make a coat layer from the part which has the thickness of a base fabric most, in a part with other small base fabric thickness, coat thickness becomes large, and the whole amount of coats increases, and, as a result, it becomes the weight rise of a hollow weave object, and the air bag bag body which carried out the flexibility down, and is not desirable in respect of storability.

[0009]

[Problem(s) to be Solved by the Invention] This invention solves the trouble of the above-mentioned conventional technique, and it is hard to generate the eye gap by the joint of 1-fold section which forms junction of the textile of two sheets especially, and the double section. And can make the difference of the thickness of the textile in a joint small, and there is little gas leakage and are [there are few amounts of coats and] uniform. It is compact and is a reliable air bag, a light weight and when an impact joins the side face of a car in more detail, it develops between crew and a car-body side-face window part, and let it be a technical problem to offer the bag body for side-face air bags which can mainly protect crew's head.

[0010]

[Means for Solving the Problem] The 1st of above-mentioned The means for solving a technical problem, i.e., this invention It is the bag body for side collision air bags which joined the textile of two sheets and was formed. The single-yarn fineness of the **** raw thread which constitutes this textile Below 4 deniers (Following d and abbreviated name) It is the bag body for side collision air bags characterized by reinforcement being more than 7.5g (following g/d and abbreviated name)/denier. The 2nd is a bag body for side collision air bags according to claim 1 whose values of the cover factor (CF) as which all of the textile the total degrees of ** of **** raw thread are 100-700d, and are [textile] two sheets are defined by the degree type are 2000-2500. The 3rd is a bag body for side collision air bags according to claim 1 whose dry heat shrinkage of the use raw thread before weaving which constitutes a textile is 5 - 15% (180 degree-Cx 30-minute processing). Coating and/or lamination processing are performed to all the outside front faces of the 4th bag body. The AUW of the spreading and the amount of pastings is the bag body for side collision air bags according to claim 1 which is two or less 80 g/m per outside surface area of a bag body, and the 5th is a bag body for side collision air bags according to claim 1 with which calendering of the front face of a textile is carried out.

[0011] Here, if the single-yarn fineness of **** raw thread becomes larger than 4d, the diameter of raw thread single yarn will become large, it becomes a bulky textile, and thickness becomes large and poses a problem at storability. Moreover, when **** raw thread reinforcement is less than 7.5g/d, the reinforcement of the air bag for taking care of crew is not enough.

[0012] Moreover, as for each of the textile of two hollow weave, CF needs to be 2000 to 2500. That is, the coat leakage when coating that it is less than 2000 occurs, or there is an engine-performance top problem of the coat cloth with which it was easy to generate an eye gap, and it was obtained in the joint. . Moreover, when there are 2500 or more, problems, such as a warp fluff, occur on weaving and it is an industrial production top problem. Furthermore, it is desirable for the **** raw thread which forms this the textile to be 100d to 700d. In the case of less than 100d, when textile strength and tear strength are inadequate and it is larger than 700d, a textile becomes upright and a problem is in storability.

[0013] It is a very important factor that the raw thread (before becoming textiles) then used is 5 - 15% (processing during 180 degree-Cx 30 minutes) in dry heat shrinkage. Because, although the restraint of raw thread was not so large in the condition of the gray goods which carried out weaving of the textile, the force in which raw thread restrained each other by making contraction of raw thread discover in

priming processing and dry heat treatment after that using 5 - 15% of raw thread by dry heat shrinkage worked, the frictional resistance between yarn-yarn became large, and it turned out that it lifting-comes to be hard of an eye gap. When dry heat shrinkage is less than 5%, the shrinkage force after contraction processing is not enough, and friction between yarn-yarn does not become sufficiently large, but an eye gap of textiles tends to take place and the eye gap by the joint of 1-fold section and the double section takes place especially at the time of air bag expansion, gas leakage happens from the part and it stops achieving the duty of crew constraint. Moreover, if it is going to produce larger raw thread than 15%, it becomes the cause of productivity aggravation by the raw thread production process, and is not desirable on economy.

[0014] Moreover, as long as the dry heat shrinkage of warp and the raw thread (before becoming textiles) used for the woof is the 5 - 15 above-mentioned% (processing during 180 degree-Cx 30 minutes) of within the limits, it may differ by warp and the woof.

[0015] As for coating and the total amount to laminate, it is desirable that they are two or less 70 g/m here. Because, in order to improve storability, the thickness of the hollow weave object itself, flexibility, etc. are the most important, but it is more desirable as there are also few coats and amounts of laminations. However, although the coat of extent which is also any part, and lamination thickness are needed in order to prevent gas leakage, as mentioned above, it is required to make it two or less 70 g/m at the maximum. They are two or less 50 g/m more preferably. If the amount is exceeded, the whole hollow weave serves as bulky and is not desirable in respect of storability.

[0016] It does not limit especially about the weaving machine used here, and a water jet loom, an air jet loom, a rapier room, a pro JIEKU tile room, etc. are used. However, they use ********, the damage to warp, yarn dirt, etc., liking a water jet loom and especially an air jet loom. Moreover, in case the shank of hollow weave is determined, jacquard equipment and Dobby-machine equipment are used. In order to carry out complicated ****** especially, jacquard equipment (an electronic formula, mechanical cable type) is needed, and electronic formula jacquard equipment is further liked and used from the ease of productivity and shank modification.

[0017] Especially as a synthetic fiber which constitutes the air bag in this invention, although a material is not limited, gay polyester, such as aliphatic series polyamide fibers, such as Nylon 66, nylon 6, Nylon 46, and Nylon 12, aromatic polyamide fiber like an aramid fiber, polyethylene terephthalate, and polybutylene terephthalate, is used especially. To others, all aromatic polyester, ultra-high-molecular-weight-polyethylene fiber, PPS fiber, polyether ketone fiber, etc. are mentioned. However, when economical efficiency is taken into consideration, polyester fiber and especially a polyamide fiber (Nylon 66, Nylon 46, nylon 6) are desirable. Moreover, in order to raise the process permeability in a raw thread production process or a post-processing process to these synthetic fibers, even if it contains various additives, it is satisfactory in any way. For example, they are an antioxidant, a thermostabilizer, a lubricating agent, an antistatic agent, a thickener, a flame retarder, etc.

[0018] Moreover, it may not limit especially as coat material and the thing of the shape of spreading or rubber may be laminated for synthetic rubber, such as a chloroprene, the Krol sulfonation olefin, and silicone, through adhesives. It becomes also in a lamination, the textile thickness difference in a joint is small, and it is required for it in an opening being made not to be made between the rubber in a joint, and textiles, and possible to stick without an opening according to the use in this invention.

[0019]

[Example] Next, an example explains this invention to a detail further. In addition, the physical properties in an example and the example of a comparison were measured by the following approach.

[0020] Porosity: 10966.27.1.JISLA law (Flagyl law)

[0021] Weight: JISL 10966.4.2 [0022] Bending resistance: 10966.19.1.JISLA law (the 45-degree cantilever method)

[0023] Thickness: JISL 10966.5 (under 240 g/cm2 pressurization)

[0024] Fablic density: JISL 10966.6 [0025] Eye gap engine performance: Pass by bias strength representation (it becomes the direction which cannot carry out an eye gap easily due to a bias powerful rise), cut off a sample with a width of face of 3cm in a direction and the middle (45 degrees) direction of

bias of a latitudinal direction, and measure tension and the maximum strength at that time by speed-of-testing 5 cm/min. so that sample slipping in a chuck may not occur in the distance between chucks of 5cm while measuring a sample.
[0026] Joint coat thickness: The joint of 1-fold section and the double section passed, the ** SEM cross-section photograph was taken respectively, the thickest part of 1-fold section (binding section) and the double section (bag Oribe) was measured, it passed and coat material thickness was expressed with the average which is **.
[0027] The priming contraction process was passed after weaving in hollow weave so that it passes example 1, and 315d/f [108] cutting on-the-strength 9.6 g/d and Nylon 66 filament raw thread of 8.0% of dry heat shrinkage might be used for the woof, it might pass by the bag part with plain weave using an air jet room and electronic jacquard equipment and it might become 62 [/] and 53 ** [/inch] inch, and the textile was succeedingly produced through desiccation and a set process. They were 7.9 g/d when the **** raw thread (total degree of ** is 330d) reinforcement of the base fabric was measured. The knife coating machine was used for the textile for silicone resin, and both sides were given and made to the coat of 45 g/m2 per one side. The physical properties of textiles are shown in Table 1.
[0028] The priming contraction process was passed after weaving in hollow weave so that it passes example 2, and the 350d/f [90] cutting reinforcement of 9.2g/d and polyester filament raw thread of 8.0% of dry heat shrinkage might be used for the woof, it might pass by the bag part with plain weave using a water jet loom and electronic jacquard equipment and it might become 62 [/] and 53 ** [/inch] inch, and the textile was succeedingly produced through desiccation and a set process. They were 7.6 g/d when the **** raw thread (total degree of ** is 365d) reinforcement of the base fabric was measured. Next, double-sided calendering was carried out by linear pressure 30 kg/cm between the metal rolls heated at 150 degrees C. After that, using the knife coating machine, per one side, the coat of 45 g/m2 was given to both sides, and silicone resin was finished. The physical properties of textiles are shown in Table 1.
[0029] The priming contraction process was passed after weaving in hollow weave so that it passes example 3, and 210d/f [72] cutting on-the-strength 9.6 g/d and Nylon 66 filament raw thread of 8.0% of dry heat shrinkage might be used for the woof, it might pass by the bag part with plain weave using an air jet room and electronic jacquard equipment and it might become 76 [/] and 65 ** [/inch] inch, and the textile was succeedingly produced through desiccation and a set process. They were 7.9 g/d when the **** raw thread (total degree of ** is 221d) reinforcement of the base fabric was measured. Using the knife coating machine, per one side, silicone resin was given to both sides and the coat of 45 g/m2 was finished [silicone resin] for the base fabric. The physical properties of textiles are shown in Table 1.
[0030] The priming contraction process was passed after weaving in hollow weave so that it passes example 4, and 420d/f [144] cutting on-the-strength 9.6 g/d and Nylon 66 filament raw thread of 8.0% of dry heat shrinkage might be used for the woof, it might pass by the bag part with plain weave using an air jet room and electronic jacquard equipment and it might become 54 [/] and 45 ** [/inch] inch, and the textile was succeedingly produced through desiccation and a set process. They were 7.8 g/d when the **** raw thread (total degree of ** is 442d) reinforcement of the base fabric was measured. Through adhesives, the chloroprene rubber sheet (0.05mm thickness) was stuck on both sides, and the base fabric was made to it. The physical properties of textiles are shown in Table 1.
[0031]
[Table 1]

	実施例1	実施例2	実施例3	実施例4
通気度 (cc/cm2/s)	<0.01 (コート袋部)	<0.01 (コート袋部)	<0.01 (コート袋部)	<0.01 (コート袋部)
重量 (袋部2枚) (g/m²)	460	496	375	540
織密度 (袋部) (本/in)	67/58	66/58	82/71	58/50
厚み (袋部2枚) (mm)	0.60	0.61	0.49	0.69
剛軟度 (コート有り袋部1枚) (mm)	85/100	94/104	65/103	92/108
バイアス強力(コート有り袋部) (N/cm)	147	155	146	176
接合部コート厚み (袋部/1重部) (μm)	69/91	73/88	70/91	50/50 空隙なし

[0032] The priming contraction process was passed after weaving in hollow weave so that it passes example of comparison 1, and 315d/f [108] cutting on-the-strength 9.6 g/d and Nylon 66 filament raw thread of 4.0% of dry heat shrinkage might be used for the woof, it might pass by the bag part with plain weave using an air jet room and electronic jacquard equipment and it might become 64 [/] and 55 ** [/inch] inch, and the textile was succeedingly produced through desiccation and a set process. They were 7.9 g/d when the **** raw thread (total degree of ** is 318d) reinforcement of the base fabric was measured. The knife coating machine was used for the base fabric for silicone resin, and both sides were given and made to the coat of 45 g/m2 per one side. The physical properties of textiles are shown in Table 2.

[0033] The priming contraction process was passed after weaving in hollow weave so that it passes example of comparison 2, and 420d/f [72] cutting on-the-strength 9.6 g/d and Nylon 66 filament raw thread of 8.0% of dry heat shrinkage might be used for the woof, it might pass by the bag part with plain weave using an air jet room and electronic jacquard equipment and it might become 54 [/] and 45 ** [/inch] inch, and the textile was succeedingly produced through desiccation and a set process. They were 7.8 g/d when the **** raw thread (total degree of ** is 443d) reinforcement of the base fabric was measured. The knife coating machine was used for the base fabric for silicone resin, and both sides were given and made to the coat of 45 g/m2 per one side. The physical properties of textiles are shown in Table 2.

[0034] The priming contraction process was passed after weaving in hollow weave so that it passes example of comparison 3, and 420d/f [72] cutting on-the-strength 9.6 g/d and Nylon 66 filament raw thread of 8.0% of dry heat shrinkage might be used for the woof, it might pass by the bag part with plain weave using an air jet room and electronic jacquard equipment and it might become 54 [/] and 45 ** [/inch] inch, and the textile was succeedingly produced through desiccation and a set process. They were 7.9 g/d when the ****** (total degree of ** is 441d) yarn reinforcement of the base fabric was measured. The knife coating machine was used for the base fabric for silicone resin, and both sides were given and made to the coat of 90 g/m2 per one side. The physical properties of textiles are shown table 2.

[0035]

[Table 2]

	比較例1	比較例2	比較例3
通気度 (cc／cm2／s)	0．05 (コート袋部)	0．07 (コート袋部)	<0．01 (コート袋部)
重量 (袋部2枚) (g／m²)	455	544	638
織密度 (袋部) (本／in)	67／58	58／50	58／50
厚み (袋部2枚) (mm)	0．55	0．71	0．79
剛軟度 (コート有り袋部1枚) (mm)	90／108	95／122	102／127
バイアス強力(コート有り袋部) (N／cm)	117	155	160
接合部コート厚み (袋部／1重部) (μm)	27／130	24／129	119／202

経／緯 を表わす

[0036] In the examples 1 and 2, as shown in Tables 1-2, although there were few amounts of coats as 45 g/m2, it filed with the bag part (double section) in a joint, the thickness difference after the coat in the section (1-fold section) was small, and the porosity of a bag part also succeeded in obtaining the lightweight air bag bag body of the outstanding engine performance which does not have gas leakage equally to about 0 at the time of air bag expansion by the ability having carried out the coat to homogeneity. It succeeded in obtaining the air bag bag body in which after rubber pasting does not have the opening section in a joint since base fabric thickness is [that there is no rubber thickness difference in a joint for a lamination] uniform in the case of an example 4.

[0037] To it, in the example 1 of a comparison, bias strength is low, the eye gap by the textile construction tended to take place, gas leakage happened from the part that it is easy to generate the eye gap by the hollow weave joint, and this was understood that the internal pressure maintenance engine performance is not enough. Moreover, the coat thickness difference in a joint becomes large, and it was easy to generate gas leakage from the bag part of the joint circumference. In the example 2 of a comparison, although it was satisfactory in respect of the eye gap, the coat thickness difference in a joint becomes large, and it was easy to generate gas leakage from the bag part of the joint circumference. In the example 3 of a comparison, although the coat thickness difference of a joint was large, many amounts of coats were written, and there was no problem of gas leakage. It corrected, therefore became the thickness rise as the whole air bag bag body, and a weight rise, and a dissatisfied result was brought at storability.

[0038]

[Effect of the Invention] According to this invention, the air bag textiles for flanks excellent in required low permeability and the safety which was excellent in storability by the ability carrying out the thin coating coat of the flexibility can be supplied.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is drawing showing an example of the bag body joint of this invention.
[Description of Notations]
1 Bag Part
2 1-fold Section
3 Coat And/or Lamination

[Translation done.]

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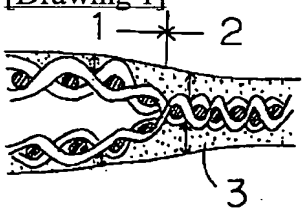
DRAWINGS

[Drawing 1]



[Translation done.]

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(54)【発明の名称】　側面衝突エアバッグ用袋体

(57)【要約】
【課題】　２枚の布帛を結合して形成される側面衝突エアバッグ用袋体の接合部での布帛の厚みの差を小さくすることが出来、また、コート量が少なくて、均一で、更に詳しくは車両の側面に衝撃が加わった時に乗員と車体側面窓部の間に展開し、主に乗員の頭部を保護することができる側面エアバッグ用袋体を提供することを課題とする。
【解決手段】　２枚の布帛を接合して形成された側面衝突エアバッグ用袋体であり、該布帛を構成する解反原糸の単糸繊度が４デニール以下（以下ｄと略称）以下、強度が７．５グラム／デニール（以下ｇ／ｄと略称）以上であることを特徴とする側面衝突エアバッグ用袋体であり、解反原糸の総繊度が１００ｄ～７００ｄであり、２枚の布帛のいずれも次式で定義されるカバーファクター（ＣＦ）の値が２０００～２５００である請求項１記載の側面衝突エアバッグ用袋体であり、布帛を構成する製織前の使用原糸の乾熱収縮率が５～１５％（１８０℃×３０分処理）である請求項１に記載の側面衝突エアバッグ用袋体である。

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【特許請求の範囲】

【請求項１】　２枚の布帛を接合して形成された側面衝突エアバッグ用袋体であり、該布帛を構成する解反原糸の単糸繊度が４デニール（以下ｄと略称）以下、強度が７．５グラム／デニール（以下ｇ／ｄと略称）以上であることを特徴とする側面衝突エアバッグ用袋体。

【請求項２】　解反原糸の総繊度が１００～７００ｄであり、２枚の布帛のいずれも次式で定義されるカバーファクター（ＣＦ）の値が２０００～２５００である請求項１記載の側面衝突エアバッグ用袋体。

【請求項３】　布帛を構成する製織前の使用原糸の乾熱収縮率が５～１５％（１８０℃×３０分処理）である請求項１記載の側面衝突エアバッグ用袋体。

【請求項４】　袋体の外側全表面にコーティングおよび／またはラミネート処理が施されており、その塗布、貼付量の総重量が袋体の外側表面積当り８０ｇ／m^2以下である請求項１記載の側面衝突エアバッグ用袋体。

【請求項５】　布帛の表面がカレンダー加工されている請求項１記載の側面衝突エアバッグ用袋体。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は自動車用安全装置の一つであるエアバッグに関するものであり、更に詳しくは、車両の側面に衝撃が加わった時に乗員と車体側面窓部の間に展開し、主に乗員の頭部を保護することを目的とするエアバッグに関するものである。

【０００２】

【従来の技術】近年、自動車安全部品の一つとしてのエアバッグは乗員の安全意識の向上に伴い、急速に装着率が向上している。エアバッグは自動車の衝突事故の際、衝撃をセンサーが感知し、インフレーターから高温、高圧のガスを発生させ、このガスによってエアバッグを急激に展開させ、乗員保護に役立つものである。

【０００３】従来、エアバッグには運転席用、助手席用の正面からの衝突時に乗員を保護するものが装着されてきたが、最近では側面からの衝突にも対応できるエアバッグが開発されてきた。

【０００４】既に提案されている側面衝突用エアバッグとしてはWO９６／２６０８７号公報に示されているように、側面衝突時や横転時に感知するセンサーと連結するガス発生装置と、そのガス発生装置に連結するエアバッグ、そのエアバッグは表面と裏面がしっかり結合されており、また実質的に平行する細長い複数のセルから構成され、そのセルは展開時に円筒状に形成され、乗員の頭部を保護できるとされている。

【０００５】また、特開平１０－１０９６０７号公報に提案されているように、２枚の織布外周部同士を接合する時に、織布を共通の織組織に製織し、袋部全体を非透気性コーティング材でシールすることで、車両転倒時の乗員拘束効果を大きくできるとしている。

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【０００６】ところで、側面衝突用のエアバッグは従来の運転席用や助手席用と異なり、収納場所がフロントピラー部、ルーフサイドレール部、センターピラー部、クウォーターピラー部など収納スペースが大きくない場所に収納するため、エアバッグ袋体の折り畳み時の体積を大きくできず、エアバッグ袋体としてはより収納性に優れていることが要求される。その点に関して、特開平１０－１０９６０７号公報尾に提案されているのは、縫製糸を使用せずに織物を構成する織り糸を共通の織り組織に製織することで厚みを薄くでき、収納性に有利になるとある。

【０００７】また、コーティングはこの側面衝突用エアバッグの場合、必要となることが通常ある。すなわち、車両の横転時を想定した場合、運転席、助手席用のエアバッグと異なりエアバッグ展開後に内圧保持時間を数秒から１０秒程度確保する必要があり、その時にコーティングをしていない場合にはいくら高密度に織った織物でも基布の糸－糸間の交点、あるいは袋織の場合に１重部と２重部の接合部での糸－糸間交点で目ずれが起こり、その結果ガス漏れが発生し、内圧保持能力が十分ではない。

【０００８】そこで、布帛の通気性を限りなくゼロに近づけるために表面にコート材を塗布する必要があり、前述した特開平１０－１０９６０７号公報の提案では基布の厚みを小さくすることはできるが、コート塗布量を少なくできる方策については一切言及されていない。何故ならば、この特開平１０－１０９６０７号公報の提案で袋織を構成すると、特に袋部を形成する周辺部の１重部と２重部の境界において布帛の厚み差が発生する。一方、袋織体全体でインフレーターからのガス漏れを無くすためにはどの部分においてもある程度のコート材が積層されている必要がある。すなわち、最も基布の厚みのある部分でコート層を作ろうとすると、その他の基布厚みの小さい部分ではコート厚みが大きくなってしまい、全体のコート量が多くなりその結果袋織体の重量アップ、柔軟性ダウンしたエアバッグ袋体となり収納性の点で好ましくない。

【０００９】

【発明が解決しようとする課題】本発明は上記従来技術の問題点を解決し、殊に2枚の布帛の接合を形成する１重部と２重部の接合部での目ずれが発生しにくく、かつガス漏れが少なく、また接合部での布帛の厚みの差を小さくすることができ、又コート量が少なくて、均一で、軽量、コンパクトで信頼性の高いエアバッグであり、更に詳しくは車両の側面に衝撃が加わった時に乗員と車体側面窓部の間に展開し、主に乗員の頭部を保護することができる側面エアバッグ用袋体を提供することを課題とする。

【００１０】

【課題を解決するための手段】上記課題を解決するため

の手段、即ち本発明の第1は、２枚の布帛を接合して形成された側面衝突エアバッグ用袋体であり、該布帛を構成する解反原糸の単糸繊度が４デニール（以下ｄと略称）以下、強度が７．５グラム／デニール（以下ｇ／ｄと略称）以上であることを特徴とする側面衝突エアバッグ用袋体であり、第２は解反原糸の総繊度が１００～７００ｄであり、２枚の布帛のいずれも次式で定義されるカバーファクター（ＣＦ）の値が２０００～２５００である請求項１記載の側面衝突エアバッグ用袋体であり、第３は布帛を構成する製織前の使用原糸の乾熱収縮率が５～１５％（１８０℃×３０分処理）である請求項１記載の側面衝突エアバッグ用袋体であり、第４は袋体の外側全表面にコーティングおよび／またはラミネート処理が施されており、その塗布、貼付量の総重量が袋体の外側表面積当り８０ｇ／m^2以下である請求項１記載の側面衝突エアバッグ用袋体であり、第５は布帛の表面がカレンダー加工されている請求項１記載の側面衝突エアバッグ用袋体である。

【００１１】ここで、解反原糸の単糸繊度が４ｄより大きくなると原糸単糸径が大きくなり、嵩高の布帛となり厚みが大きくなり、収納性に問題となる。また解反原糸強度が７．５ｇ／ｄ未満の場合、乗員を保護するためのエアバッグの強度が十分でない。

【００１２】また、袋織２枚の布帛の各々は、ＣＦは２０００から２５００であることが必要である。すなわち、２０００未満であるとコーティングした時のコート漏れが発生したり、接合部において目ずれが発生しやすく、得られたコート布の性能上問題がある。。また２５００以上あると製織上、経糸毛羽等の問題が発生し、工業生産上問題である。更にはその該布帛を形成する解反原糸が１００ｄから７００ｄであることが望ましい。１００ｄ未満の場合、布帛強力や引裂強力が不十分で、また７００ｄより大きいと布帛が剛直になり収納性に問題がある。

【００１３】その時使用する原糸（織物になる前）は乾熱収縮率で５～１５％（１８０℃×３０分間処理）であることは非常に重要なファクターである。何故ならば、布帛を製織した生機の状態においては原糸同士の拘束力はあまり大きくないが、乾熱収縮率で５～１５％の原糸を用い、その後原糸の収縮を沸水処理中、乾熱処理中で発現させることで原糸同士がお互いを拘束する力が働き、糸－糸間の摩擦抵抗が大きくなり目ずれを起こしにくくなることが判った。乾熱収縮率が５％未満の場合には収縮加工後の収縮力が十分ではなく、糸－糸間摩擦が十分大きくならず織物の目ずれが起こり易く、特に１重部と２重部の接合部での目ずれがエアバッグ展開時に起こるとその部分からガス漏れが起こり、乗員拘束の役目を果たさなくなる。また、１５％より大きい原糸を作製しようとすると、原糸製造工程での生産性悪化の原因となり経済上好ましくない。

【００１４】また、経糸，緯糸用に使用される原糸（織物になる前）の乾熱収縮率は上記５～１５％（１８０℃×３０分間処理）の範囲内であれば経糸と緯糸で異なっていてもよい。

【００１５】ここでコーティング、ラミネートするトータル量は７０ｇ／m^2以下であることが好ましい。何故ならば収納性を良くするためには、袋織物自体の厚み、柔軟性等が最も重要であるが、コート、ラミネート量も少なければ少ないほど好ましい。ただし、前述したようにガス漏れを防ぐためにはどの部分でもある程度のコート、ラミネート厚みが必要となってくるが、最大でも７０ｇ／m^2以下にすることが必要である。より好ましくは５０ｇ／m^2以下である。その量を超えてしまうと袋織全体が嵩高となり、収納性の面で好ましくない。

【００１６】ここで使用される織機については特に限定するものではなく、例えばウォータージェットルーム、エアジェットルーム、レピアルーム、プロジェクタイルルーム等が使用される。しかし、織生産性、経糸へのダメージ、糸汚れ等を考慮するとウォータージェットルーム、エアジェットルームが特に好まれて使われる。また袋織の柄を決定する際には、ジャカード装置やドビー装置が用いられる。特に複雑な柄出しをするためにはジャカード装置（電子式、機械式）が必要となり、更に生産性、柄変更の容易さより電子式ジャカード装置が好まれて使用される。

【００１７】本発明におけるエアバッグを構成する合成繊維としては、特に素材を限定するものではないが、特にナイロン６６、ナイロン６、ナイロン４６、ナイロン１２等の脂肪族ポリアミド繊維、アラミド繊維のような芳香族ポリアミド繊維、ポリエチレンテレフタレートやポリブチレンテレフタレートなどのホモポリエステルが使用される。他には全芳香族ポリエステル、超高分子量ポリエチレン繊維、ＰＰＳ繊維、ポリエーテルケトン繊維等が挙げられる。ただし、経済性を勘案するとポリエステル繊維、ポリアミド繊維（ナイロン６６、ナイロン４６、ナイロン６）が特に好ましい。また、これらの合成繊維には原糸製造工程や後加工工程での工程通過性を向上させるために、各種添加剤を含有していても何ら問題はない。例えば、酸化防止剤、熱安定剤、平滑剤、帯電防止剤、増粘剤、難燃剤等である。

【００１８】またコート材としては特に限定するものではなく、クロロプレン、クロルスルフォン化オレフィン、シリコーンなどの合成ゴムを塗布またはゴム状のものを接着剤を介してラミネートしても良い。ラミネートの場合にも接合部における織物厚み差が小さく、接合部でのゴムと織物の間に空隙ができないようにすることが必要であり、本発明における効用により空隙なく貼付することが可能となる。

【００１９】

【実施例】次に実施例により、本発明を更に詳細に説明

する。なお、実施例、比較例中の物性は下記の方法で測定した。

【００２０】通気度：ＪＩＳＬ１０９６６．２７．１．Ａ法（フラジール法）

【００２１】重量：ＪＩＳＬ１０９６６．４．２

【００２２】剛軟度：ＪＩＳＬ１０９６６．１９．１．Ａ法（４５°カンチレバー法）

【００２３】厚み：ＪＩＳＬ１０９６６．５（２４０ｇ／ｃｍ^{2}加圧下）

【００２４】織密度：ＪＩＳＬ１０９６６．６

【００２５】目ずれ性能：バイアス強力で代表（バイアス強力アップで目ずれしにくい方向となる）経方向、緯方向の中間（４５°）のバイアス方向に幅３ｃｍのサンプルを切取り、チャック間距離５ｃｍでサンプルを測定中にチャック内サンプル滑りが発生しないよう引張速度５ｃｍ／ｍｉｎ．で引張り、その時の最大強力を測定する。

【００２６】接合部コート厚み：１重部と２重部の接合部の経、緯ＳＥＭ断面写真を各々撮り、コート材厚みを１重部（綴じ部）、２重部（袋織部）の最厚部を測定し、その経、緯の平均値で表わした。

【００２７】実施例１

経、緯糸に３１５ｄ／１０８ｆの切断強度９．６ｇ／ｄ、乾熱収縮率８．０％のナイロン６６フィラメント原糸を用い、エアージェットルームと電子ジャカード装置を用いて平織にて袋部で経６２本／ｉｎ，緯５３本／ｉｎになるよう袋織にて製織後、沸水収縮工程を通過させ、引き続き乾燥、セット工程を経て加工反を作製した。その基布の解反原糸（総織度は３３０ｄ）強度を測定すると７．９ｇ／ｄであった。その加工反にシリコーン樹脂をナイフコーターを用いて片面につき４５ｇ／ｍ^{2}のコートを両面に施し仕上げた。織物の物性を表１に示す。

【００２８】実施例２

経、緯糸に３５０ｄ／９０ｆの切断強度９．２ｇ／ｄ、乾熱収縮率８．０％のポリエステルフィラメント原糸を用い、ウォータージェットルームと電子ジャカード装置を用いて平織にて袋部で経６２本／ｉｎ，緯５３本／ｉｎになるよう袋織にて製織後、沸水収縮工程を通過させ、引き続き乾燥、セット工程を経て加工反を作製した。その基布の解反原糸（総織度は３６５ｄ）強度を測定すると７．６ｇ／ｄであった。次に１５０℃に加熱した金属ロール間で線圧３０ｋｇ／ｃｍで両面カレンダー加工をした。その後シリコーン樹脂をナイフコーターを用いて片面につき４５ｇ／ｍ^{2}のコートを両面に施し仕上げた。織物の物性を表１に示す。

【００２９】実施例３

経、緯糸に２１０ｄ／７２ｆの切断強度９．６ｇ／ｄ、乾熱収縮率８．０％のナイロン６６フィラメント原糸を用い、エアージェットルームと電子ジャカード装置を用いて平織にて袋部で経７６本／ｉｎ，緯６５本／ｉｎになるよう袋織にて製織後、沸水収縮工程を通過させ、引き続き乾燥、セット工程を経て加工反を作製した。その基布の解反原糸（総織度は２２１ｄ）強度を測定すると７．９ｇ／ｄであった。その基布をシリコーン樹脂をナイフコーターを用いて片面につき４５ｇ／ｍ^{2}のコートを両面に施し仕上げた。織物の物性を表１に示す。

【００３０】実施例４

経、緯糸に４２０ｄ／１４４ｆの切断強度９．６ｇ／ｄ、乾熱収縮率８．０％のナイロン６６フィラメント原糸を用い、エアージェットルームと電子ジャカード装置を用いて平織にて袋部で経５４本／ｉｎ，緯４５本／ｉｎになるよう袋織にて製織後、沸水収縮工程を通過させ、引き続き乾燥、セット工程を経て加工反を作製した。その基布の解反原糸（総織度は４４２ｄ）強度を測定すると７．８ｇ／ｄであった。その基布にクロロプレンゴムシート（0.05mm厚み）を接着剤を介し両面に貼付し仕上げた。織物の物性を表１に示す。

【００３１】

【表１】

	実施例１	実施例２	実施例３	実施例４
通気度（ｃｃ／ｃｍ２／ｓ）	＜０．０１（コート袋部）	＜０．０１（コート袋部）	＜０．０１（コート袋部）	＜０．０１（コート袋部）
重量（袋部２枚）（ｇ／㎡）	４６０	４９６	３７５	５４０
織密度（袋部）（本／ｉｎ）	６７／５８	６６／５８	８２／７１	５８／５０
厚み（袋部２枚）（ｍｍ）	０．６０	０．６１	０．４９	０．６９
剛軟度（コート有り袋部１枚）（ｍｍ）	８５／１００	９４／１０４	６５／１０３	９２／１０８
バイアス強力（コート有り袋部）（Ｎ／ｃｍ）	１４７	１５５	１４６	１７６
接合部コート厚み（袋部／１重部）（μｍ）	６９／９１	７３／８８	７０／９１	５０／５０空隙なし

【００３２】比較例１
経、緯糸に３１５ｄ／１０８ｆの切断強度９．６ｇ／ｄ、乾熱収縮率４．０％のナイロン６６フィラメント原糸を用い、エアージェットルームと電子ジャカード装置を用いて平織にて袋部で経６４本／ｉｎ，緯５５本／ｉｎになるよう袋織にて製織後、沸水収縮工程を通過させ、引き続き乾燥、セット工程を経て加工反を作製した。その基布の解反原糸（総織度は３１８ｄ）強度を測定すると７．９ｇ／ｄであった。その基布にシリコーン樹脂をナイフコーターを用いて片面につき４５ｇ／m^2のコートを両面に施し仕上げた。織物の物性を表２に示す。
【００３３】比較例２
経、緯糸に４２０ｄ／７２ｆの切断強度９．６ｇ／ｄ、乾熱収縮率８．０％のナイロン６６フィラメント原糸を用い、エアージェットルームと電子ジャカード装置を用いて平織にて袋部で経５４本／ｉｎ，緯４５本／ｉｎになるよう袋織にて製織後、沸水収縮工程を通過させ、引き続き乾燥、セット工程を経て加工反を作製した。その基布の解反原糸（総織度は４４３ｄ）強度を測定すると７．８ｇ／ｄであった。その基布にシリコーン樹脂をナイフコーターを用いて片面につき４５ｇ／m^2のコートを両面に施し仕上げた。織物の物性を表２に示す。
【００３４】比較例３
経、緯糸に４２０ｄ／７２ｆの切断強度９．６ｇ／ｄ、乾熱収縮率８．０％のナイロン６６フィラメント原糸を用い、エアージェットルームと電子ジャカード装置を用いて平織にて袋部で経５４本／ｉｎ，緯４５本／ｉｎになるよう袋織にて製織後、沸水収縮工程を通過させ、引き続き乾燥、セット工程を経て加工反を作製した。その基布の解反原（総織度は４４１ｄ）糸強度を測定すると７．９ｇ／ｄであった。その基布にシリコーン樹脂をナイフコーターを用いて片面につき９０ｇ／m^2のコートを両面に施し仕上げた。織物の物性を表２示す。
【００３５】
【表２】

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	比較例１	比較例２	比較例３
通気度（ｃｃ／ｃｍ２／ｓ）	０．０５（コート袋部）	０．０７（コート袋部）	＜０．０１（コート袋部）
重量（袋部２枚）（ｇ／㎡）	４５５	５４４	６３８
織密度（袋部）（本／ｉｎ）	６７／５８	５８／５０	５８／５０
厚み（袋部２枚）（ｍｍ）	０．５５	０．７１	０．７９
剛軟度（コート有り袋部１枚）（ｍｍ）	９０／１０８	９５／１２２	１０２／１２７
バイアス強力(コート有り袋部)（Ｎ／ｃｍ）	１１７	１５５	１６０
接合部コート厚み（袋部／１重部）（μｍ）	２７／１３０	２４／１２９	１１９／２０２

経／緯 を表わす

【００３６】表１～２から判るように、実施例１，２ではコート量が４５ｇ／m^2と少ないにも関わらず、接合部での袋部（２重部）と綴じ部（１重部）でのコート後の厚み差が小さく、均一にコートできていることにより、袋部の通気度もほぼ０に等しくエアバッグ展開時にガス漏れのない優れた性能の軽量エアバッグ袋体を得ることに成功した。実施例４の場合、ラミネートのため接合部でのゴム厚み差はなく、かつ基布厚みが均一なため、ゴム貼付後も接合部において空隙部がないエアバッグ袋体を得ることに成功した。

【００３７】それに対し、比較例１ではバイアス強力が低く、織組織での目ずれが起こり易く、これは袋織接合部での目ずれが発生しやすくその部分からガス漏れが起こり内圧保持性能が十分でないことが判った。また、接合部におけるコート厚み差が大きくなり接合部周辺の袋部よりガス漏れが発生しやすかった。比較例２では目ずれの点では問題ないが、接合部におけるコート厚み差が＊大きくなり接合部周辺の袋部よりガス漏れが発生しやすかった。比較例３では接合部のコート厚み差が大きいがコート量を多くしたため、ガス漏れの問題はなかった。ただし、そのためエアバッグ袋体全体としての厚みアップ、重量アップとなり収納性に不満足な結果となった。

【００３８】

【発明の効果】本発明によれば、必要な低通気性、柔軟性を薄塗りコートできることによって収納性に優れた安全性に優れた側部用エアバッグ織物を供給することができる。

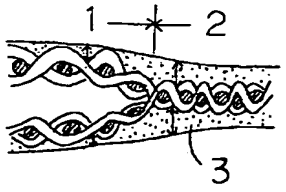
【図面の簡単な説明】

【図１】本発明の袋体接合部の一例を示す図である。

【符号の説明】

1　袋部
2　１重部
3　コートand/orラミネート

【図１】



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